PRELIMINARY INFORMATION

650 Series Oscillator
Plug-in Unit

Model 653AHB-S2 Serial No. 102

AVIONICS POOL

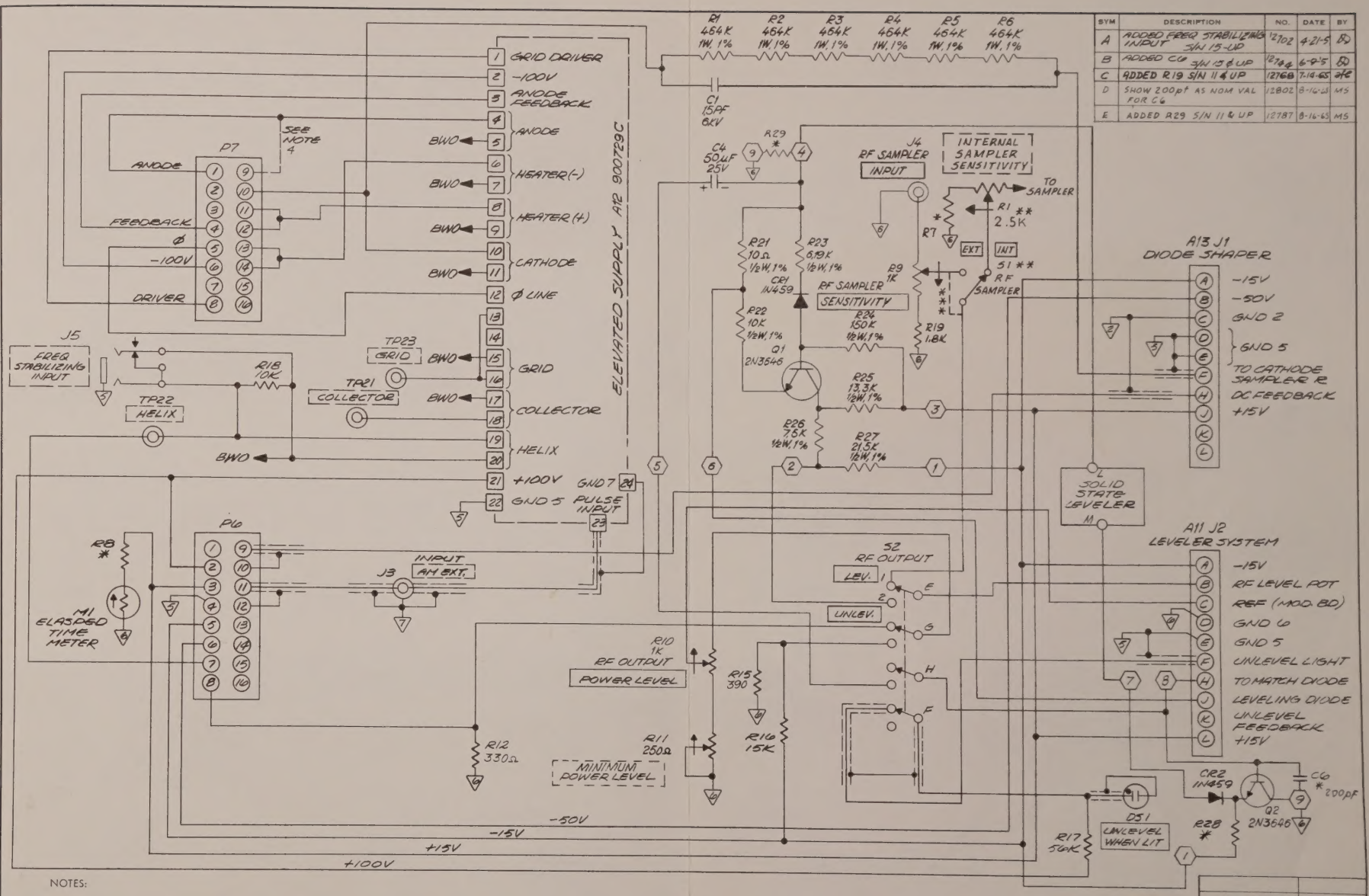
ALFRED ELECTRONICS 3176 PORTER DRIVE, PALO ALTO, CALIF.

PRELIMINARY INFORMATION

650 Series Oscillator
Plug-in Unit

Model 653AHB-52 Serial No. 107

AVIONICS POOL



SYM	DESCRIPTION	NO.	DATE	BY
A	ADDED FREQ STABILIZING INPUT S/N 15-UP	12702	4-21-65	BD
B	ADDED C6 S/N 13 & UP	12764	6-9-65	BD
C	ADDED R19 S/N 11 & UP	12768	7-16-65	JFE
D	SHOW 200pf AS NOM VAL FOR C6	12802	8-16-65	MS
E	ADDED R29 S/N 11 & UP	12787	8-16-65	MS

NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   1A. ALL RESISTORS IN OHMS, 1/2 W, 10%
   1B. ALL CAPACITORS IN MICROFARADS, 500 V
   1C. ALL 1% RESISTORS ARE METAL FILM
2. SQUARES (□) DESIGNATE TERMINAL CONNECTIONS ON PC BOARD "A12" ASSEMBLY NO. 950620.
3. HEXAGONS (⬡) DESIGNATE TERMINAL CONNECTIONS ON DIODE SWITCH DRIVER CIRCUIT PC BOARD, ASSEMBLY NUMBER 950887.
4. JUMPER FOR ANODE VOLTAGE GREATER THAN 100 VOLTS.
5. *OPTIONAL, REFER TO INSTRUCTION MANUAL.
6. **INCLUDED ONLY ON UNITS WITH INTERNAL RF SAMPLER (AK MODEL NUMBER SUFFIX).
7. ***CONNECTED ON UNITS WITHOUT INTERNAL RF SAMPLER.

ITEM	REQD	PART NO.	DESCRIPTION

LIST OF MATERIAL

MATERIAL

MATERIAL STOCK NO.

FINISH OR TREATMENT

DRAWN [illegible] DATE 1-20-65

ENG

PROD

SCALE

DIMENSIONS ARE IN INCHES
TOL: XX ± .015 .XXX ± .005 ANGLE ± ½°
UNLESS INDICATED OTHERWISE

SCHEMATIC PLUG-IN SOLID STATE LEVELING

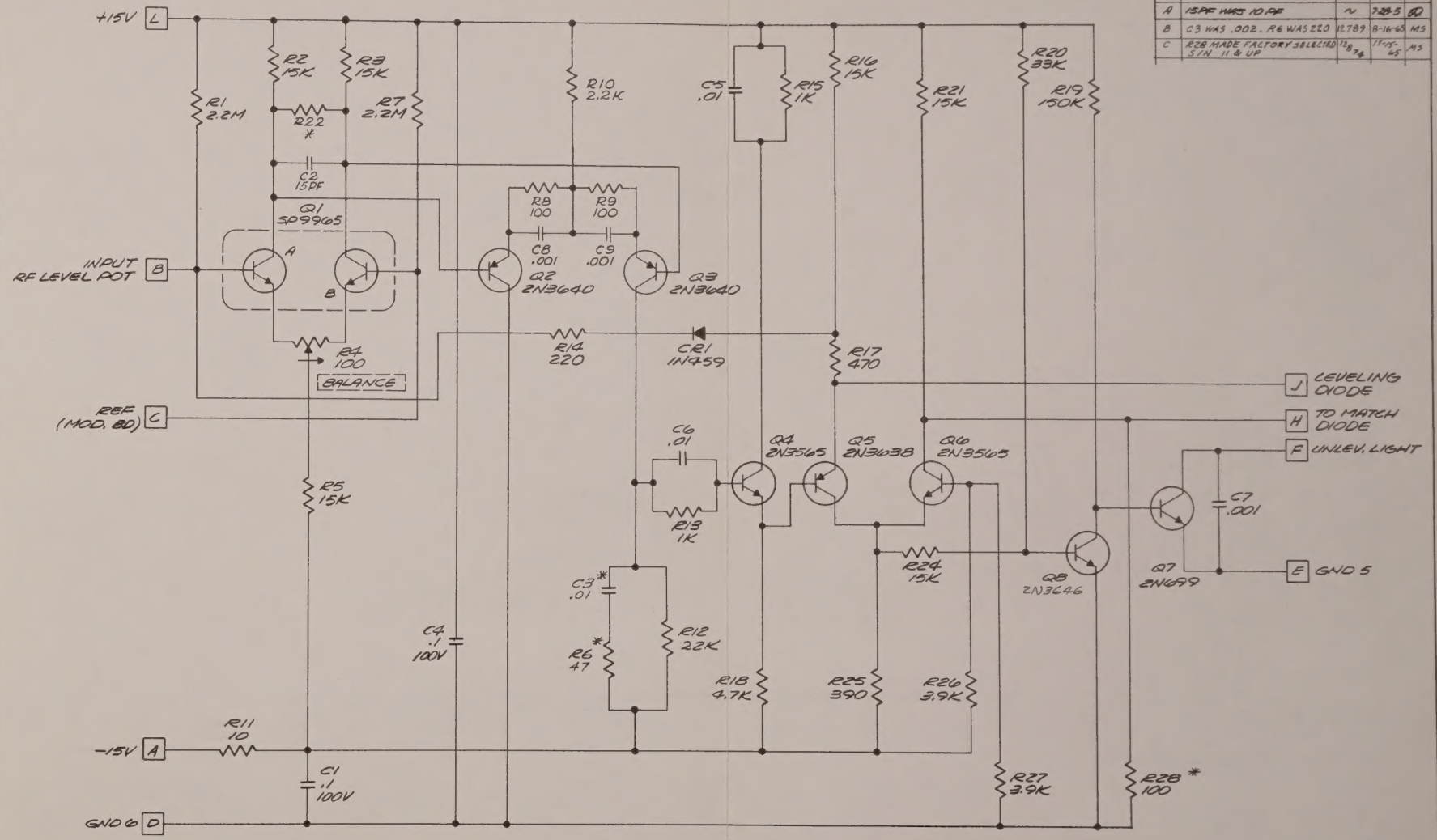
ALFRED ELECTRONICS
PALO ALTO, CALIFORNIA

900744C-1

SHEET 1 OF 1

S/N 15-UP	650AB
NEXT ASSY	USED ON

SYM	DESCRIPTION	NO.	DATE	BY
A	15PF WAS 10 PF	N	7-28-5	GD
B	C3 WAS .002. R6 WAS 220	12789	8-16-65	MS
C	R28 MADE FACTORY SELECTED S/N 11 & UP	12874	11-15-65	MS



NOTES:

1., UNLESS OTHERWISE SPECIFIED:
- 1A. ALL RESISTOR IN OHMS, 1/2W, 10%
- 1B. ALL CAPACITOR IN MICROFARADS, 500V
- 1C. ALL RESISTOR 1% ARE METAL FILM

2., SQUARES (□) DESIGNATES TERMINAL CONNECTION ON ASSY "A11", ASSEMBLY NO. 950676

* FACTORY SELECTED VALUE

ITEM	REQD	PART NO.	DESCRIPTION

LIST OF MATERIAL

MATERIAL

MATERIAL STOCK NO.

FINISH OR TREATMENT

DRAWN DATE 5-8-5

ENG 5-5-65

PROD 5-7-65

SCALE

SCHEMATIC
SOLID STATE LEVELER
(SOLID-STATE)

DIMENSIONS ARE IN INCHES
TOL: .XX ± .015, .XXX ± .005, ANGLE ± ½°
UNLESS INDICATED OTHERWISE

NEXT ASSY: 650A

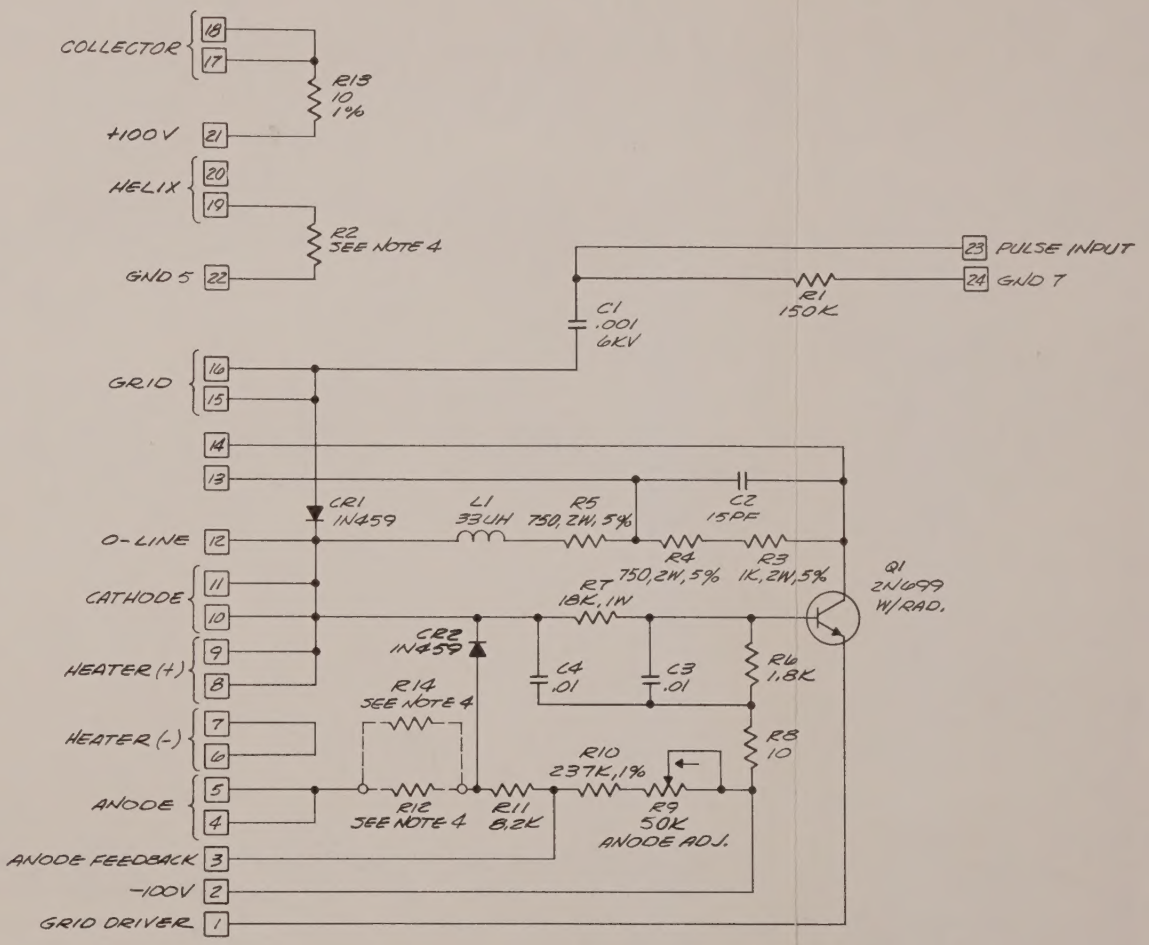
USED ON

ALFRED ELECTRONICS
PALO ALTO, CALIFORNIA

900734C

SHEET 1 OF 1

SYM	DESCRIPTION	NO.	DATE	BY
A	BROKE CONNECTION BETWEEN 19 AND 20. SEE PLUG IN SCHEMATICS FOR APPLICABLE S.N.	12702	4-22-5	WN



NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   - 1A. ALL RESISTOR IN OHMS, 1/2W, 10%
   - 1B. ALL RESISTORS VALUE 1% ARE METAL FILM
   - 1C. ALL CAPACITOR IN MICROFARADS, 500V
2. SQUARES (□) DESIGNATES TERMINAL CONNECTION ON ASSY "A12" ASSEMBLY NO. 950620
3. PREFIX REFERENCE DESIGNATORS BY "A12" (I.E.: A12R1, A12Q1)
4. REFER TO INSTRUCTION MANUAL

ITEM	REQD	PART NO.	DESCRIPTION
			LIST OF MATERIAL

SER NO. 11-UP	650
NEXT ASSY	USED ON

MATERIAL

DRAWN VK Itow 8-3-4

ENG 1-4-65

PROD 1-11-65

MATERIAL STOCK NO.

FINISH OR TREATMENT

SCALE

SCHEMATIC
ELEVATED SUPPLY

DIMENSIONS ARE IN INCHES
TOL: .XX ± .015, .XXX ± .005, ANGLE ± ½°
UNLESS INDICATED OTHERWISE

ALFRED ELECTRONICS
PALO ALTO, CALIFORNIA

9007290

SHEET 1 OF 1

SYM	DESCRIPTION	NO	DATE	BY
A	Q1 & Q2 REPLACED Q1A+Q1B S/N 30 & UP	12700	4-15-65	MN
B	SCHEMATIC ERROR 227 WAS SHOWN AS 1.5K	12772	7-16-66	JFC

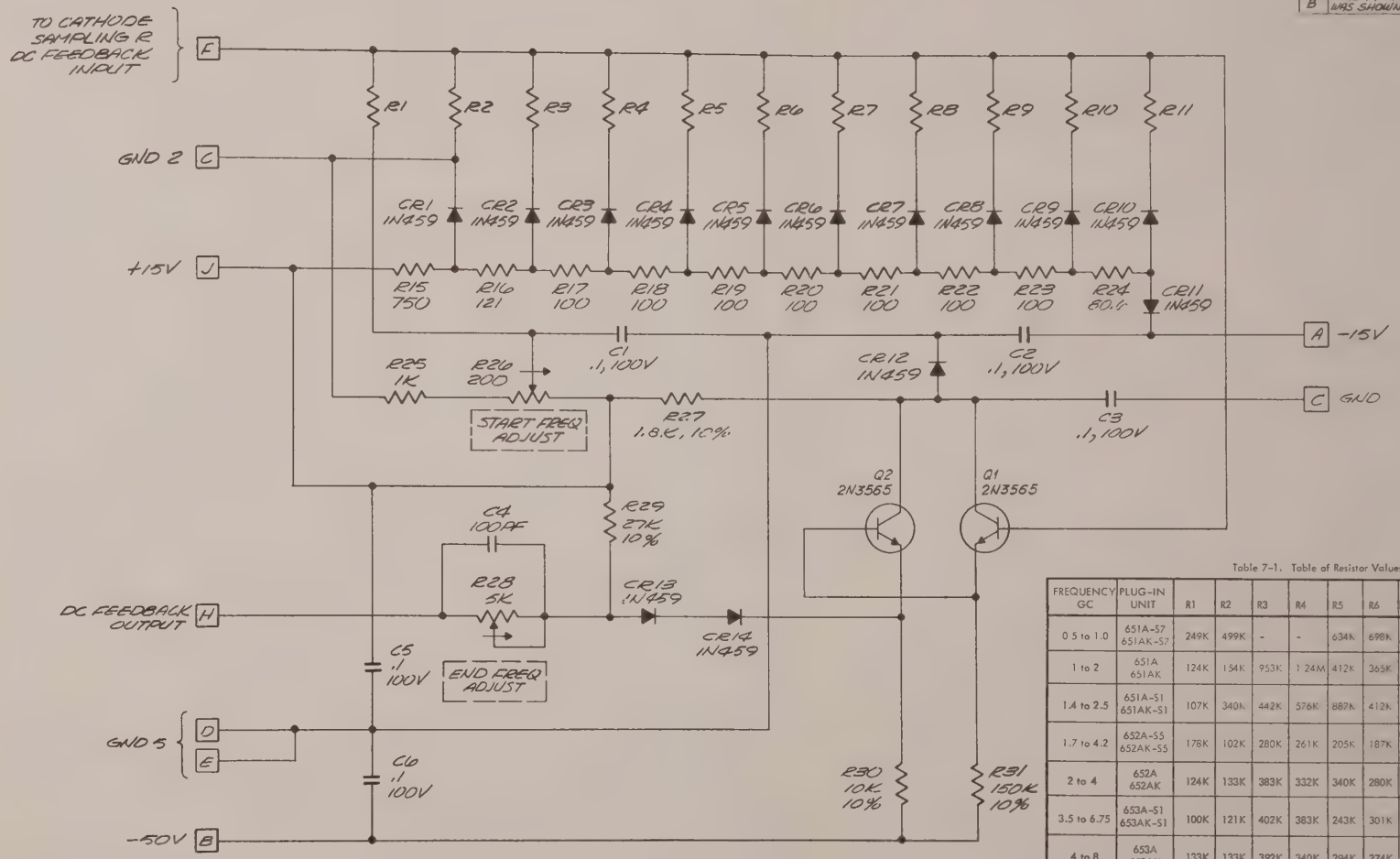


Table 7-1. Table of Resistor Values

FREQUENCY GC	PLUG-IN UNIT	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
0.5 to 1.0	651A-S7 651AK-S7	249K	499K	-	-	634K	698K	887K	-	-	-	750K
1 to 2	651A 651AK	124K	154K	953K	1.24M	412K	365K	442K	825K	324K	383K	976K
1.4 to 2.5	651A-S1 651AK-S1	107K	340K	442K	576K	887K	412K	464K	1.15M	374K	412K	1.15M
1.7 to 4.2	652A-S5 652AK-S5	178K	102K	280K	261K	205K	187K	210K	154K	147K	137K	162K
2 to 4	652A 652AK	124K	133K	383K	332K	340K	280K	301K	267K	232K	221K	232K
3.5 to 6.75	653A-S1 653AK-S1	100K	121K	402K	383K	243K	301K	237K	374K	130K	340K	174K
4 to 8	653A 653AK	133K	133K	392K	340K	294K	274K	243K	215K	200K	187K	154K
3.7 to 8.3	653A-S2 653AK-S2	158K	110K	316K	261K	226K	221K	178K	165K	154K	124K	110K

(All resistors are fixed, composition, 1/2 w, 10%)

NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   1A. ALL RESISTORS IN OHMS, 1/2W, 1% METAL FILM
   1B. ALL CAPACITORS IN MICROFARADS
2. REFER TO INSTRUCTION MANUAL FOR SPECIFIC VALUE OF R1 THRU R11 FOR THE PARTICULAR MODEL INVOLVED
3. SQUARES (□) DESIGNATE PRINTED CIRCUIT CONNECTION ON ASSY NO. 950---
4. PREFIX REFERENCE DESIGNATORS BY "A13" (I.E: A13R1, A13Q2)

Manual 650-2

ITEM	REQD	PART NO.	DESCRIPTION
			LIST OF MATERIAL

MATERIAL

MATERIAL STOCK NO.

FINISH OR TREATMENT

DRAWN A. Stein 1-4-65
ENG. [signature] 1-4-65
PROD. H. Kibrick 1-11-65

SCALE

SCHEMATIC DIODE SHAPER

DIMENSIONS ARE IN INCHES
TOL: .XX ± .015, .XXX ± .005, ANGLE ± ½°
UNLESS INDICATED OTHERWISE

S/N 11-UP | 650
NEXT ASSY | USED ON

ALFRED ELECTRONICS
PALO ALTO CALIFORNIA

900713C-2

SHEET / OF /

ALFRED

Tube Warranty and Replacement Procedure

Tube Replacement

All TWT and BWO tubes furnished in ALFRED instruments are available from ALFRED ELECTRONICS or the tube manufacturer for either warranty or out-of-warranty replacements. Current prices are given on the Replacement Tube Price List.

Tube Warranty

On ALFRED supplied TWT and BWO tubes used in catalog instruments, ALFRED ELECTRONICS extends the full warranty given by the tube manufacturer current at the time of replacement and, in addition, offers the following minimum warranty:

> Tubes are warranted to meet specifications against defects in workmanship, materials and construction for a period of one year or a rated number of heater hours (Column A) whichever expires first. If a defect occurs during the warranty period, a prorated adjustment will be made based on the current list price of the tube and the percentage of rated heater hours (Column A) or the one year period, whichever results in lesser credit. If failure occurs within two months after shipment and within the unconditionally warranted heater hours (Column B) replacement will be made at no charge.

TWT

Mfg.	Power	A	B
Huggins	1 - 10 mw	2000	500
MEC	1 - 20 mw	2000	500
Huggins	1 watt	1000	250
MEC	1 watt	1500	500
MEC	1 - 10 watt	1000	500
Huggins	low NF, to 15 db	1500	250
MEC	low NF, to 15 db	1500	250
ITT	10 watt	500	50

BWO

Mfg.	Frequency	A	B
All	0.5 to 26.5 Gc	2500	250
Varian	26.5 to 40 Gc	1000	250

WARRANTY CONDITIONS APPLY ONLY TO TUBES LISTED ABOVE WHICH ARE USED IN ALFRED CATALOG INSTRUMENTS.

Return Authorization

TO OBTAIN WARRANTY CREDIT THE TUBE SERVICE REPORT MUST BE COMPLETED AND RETURNED WITH THE TUBE.

Return Procedure

In case of tube or instrument failure, please contact the factory or your local sales representative for advice or authorization to return either the tube or the instrument to the factory. NO TUBE OR INSTRUMENT WILL BE ACCEPTED FOR REPAIR OR CREDIT ADJUSTMENT WITHOUT WRITTEN AUTHORIZATION AND ACCOMPANYING SERVICE REPORT.

When the authorization is received, pack the tube in a rigid container (use original carton if available) at least 4" larger than the tube in each dimension. Wrap the tube with 1/4" of soft padding material and heavy kraft paper before placing in container. Pack at least 2" of resilient dunnage such as rubberized hair, foam, or similar shock absorbing material completely around the tube. Mark the container "FRAGILE" and ship PREPAID via air freight, air express or rail express. Do not ship via parcel post or air parcel post since experience has shown that fragile items are more apt to be damaged when shipped via these methods. At least 6" of rubberized hair (or equivalent shock absorbing material) is required for an instrument.

Repairable Tube

If the returned tube is found to be repairable, the user will be asked to issue a purchase order for repair charges determined by the original tube manufacturer. In general, the repair will be at no cost if the tube is in warranty and there is no evidence of misuse or abnormal conditions of operation.

In-Warranty Failure of BWO Tubes

If a BWO fails during the warranty period, please issue a purchase order for a new BWO tube at the tube list price and return the defective BWO tube. The defective tube will be examined by the tube manufacturer and if the failure is caused by tube malfunction, warranty credit will be issued. For warranty credit based on month of service, credit will be granted based on date when the defective tube is received at plant.

Warranty Credit

Any applicable credit allowed under the terms of this warranty applies only toward the future purchase of a replacement tube from ALFRED ELECTRONICS. Cash settlements will not be made. In terms of this warranty, a replacement tube must be the same type as that on which credit is allowed. Credit for one tube only may be applied toward the purchase of a single replacement tube. Warranty credit remains in effect for a maximum of six (6) months from date ALFRED ELECTRONICS notifies the customer. All credits will be based on the purchase price of the tube which prevails at the time the order for a replacement tube is received by ALFRED ELECTRONICS.

BWO RF Cables

RF OUTPUT CABLE MUST ACCOMPANY BWO TUBES returned for warranty credit, repair or replacement. If rf output cable is NOT returned, the cable price is added to the normal BWO repair or replacement charge. For prices see Replacement Tube Price List.

Special Conditions

If a returned tube or instrument proves not to be defective after test and evaluation at ALFRED ELECTRONICS, the tube or instrument will be returned at the customers' expense.

The final determination as to whether the tube failed in normal operation thereby bringing it under the applicable warranty or whether the tube was misused thereby excluding it from application of the warranty provisions, lies solely with the tube manufacturer.

Data, warranty credit, and prices subject to change without notice.

AVIONICS

5-6-65

ALFRED ELECTRONICS

Service Report

Instrument Model _____ Serial No. _____ Date Received _____

TW/BWO Tube Type _____ Serial No. _____ Date Received _____

Date First Tested _____ Date Placed in Service _____ Date of Failure _____

Total Number of Hours of TWT/BWO Heater Operation _____

_____

1. Was operation normal just prior to failure? Yes _____ No _____
2. If not, what was done to adjust it? _____

_____

_____

3. Has proper cooling been maintained during tube operation? _____

_____

4. Did helix overcurrent tripout occur? _____

_____

5. Was environment normal? (specify) _____

_____

6. Symptoms – (describe failure) _____

_____

_____

7. Operating conditions at time of failure (indicate any unusual conditions) _____

_____

_____

8. Name of person to contact regarding evaluation of failure _____

Telephone No. _____ Signature _____

Title _____

Date _____

ALFRED

Tube Warranty and Replacement Procedure

Tube Replacement

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Huggins	1 watt	1000	250
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Data, warranty credit, and prices subject to change without notice.

5-6-65

THIS ENVELOPE CONTAINS:
ADDENDUM SHEETS
TEST DATA